Sternheimer Proposal: FSAE Suspension and Chassis

In the summer of 2017, Formula SAE at Virginia Commonwealth University competed in their first SAE sanctioned event held in Lincoln, Nebraska. This gave rise to this particular project, as it provided the team with a new purpose of becoming a competitive force in future SAE events. The Formula SAE senior design team has been tasked with designing and optimizing the suspension system, as well as designing an alternative chassis for the VCU-02 vehicle. The goal is to build upon the knowledge gained during the design and fabrication of the initial prototype vehicle that was entered in competition this past summer. This gives the team the opportunity to utilize more sophisticated software to analyze and design these systems at a much higher level than previously thought possible.

This project provides the group a unique experience with automotive engineering design. This specific educational avenue has not been pursued here at VCU. The purpose is to provide the senior design group the ability to utilize industry leading software to optimize complex mechanical systems. Fortunately, the opportunity allows the team to apply theoretical engineering knowledge to an extremely interesting practical application. Automotive engineering is a relatively niche field in regards to engineering. However, this is one of the most important facets of engineering that we all experience on a daily basis. By pursuing this specialized field, this group will be able to gain a depth of knowledge in regards to vehicle dynamics, chassis design, and higher level stress analysis. This particular senior design project is just the beginning of the team’s academic pursuit in regards to this field. The Formula SAE team will continue to educate undergraduate students through this important alternative avenue.

In recent years the field of automotive engineering has emerged as one of the dominating industries of our time; mainly because of developments relating to hybrid, electric, and autonomous vehicles. It is imperative to continue training and preparing competent engineers for this area of expertise. That is one of the main objectives behind SAE’s initiative to assist and provide collegiate students with a collaborative racing design experience. By pursuing knowledge in regards to this field of engineering, while still involved in undergraduate study, our team members will be more prepared when it comes time to professionally participate in automotive engineering design. There seldom are opportunities to pursue specific forms of engineering during undergraduate studies. We are here to provide a unique experience for the dedicated individuals who are actively pursuing careers in the automotive field. This prior experience ensures that quality and safety are always within the scope of the ever-present and ever-evolving field of automotive engineering.

Team Members:

David Seaton  
seatonda@vcu.edu  
(804) 243-0527

Alex Perron  
perrona@vcu.edu  
(919) 695-5771

Parker Brookfield  
brookfieldpj@vcu.edu  
(804) 405-4061

Theo DiPace  
diapacetj@vd.edu  
(410) 608-5505

Capstone Advisor:

Charles Cartin  
cartincp@vcu.edu  
(804) 827-3569